

CLAIMS

1. An image processing apparatus comprising an image processing section which conducts image processing on image data, wherein the image processing section compresses a hue reproduction angle in a range of flesh color area corresponding to a flesh color in the image data.
2. The image processing apparatus of claim 1, wherein the image processing section compresses the hue reproduction angle in a range of flesh color area such that the range of flesh color area is converged to a target hue reproduction angle specified as a target.
3. The image processing apparatus of claim 1, wherein the image processing section changes a center of a compressed hue reproduction angle in a range of the flesh color area and/or an amount of compression, based on a color temperature and a white point of illumination light at image data generation.
4. The image processing apparatus of claim 1, wherein the image processing section enhances a degree of the compression of the hue reproduction angle as an angle of the image data recedes from the target hue reproduction angle, in the case of converging the range of the flesh color area to the target hue reproduction angle determined specifically.
5. The image processing apparatus of claim 1, wherein, the image processing section decreases a degree of compression of

the hue reproduction angle as chroma of the image data becomes higher.

6. An image processing apparatus comprising an image processing section which conducts image processing on image data, wherein the image processing section makes a contrast of neutral color image data to be low contrast, and makes a contrast of chromatic color image data to be high contrast.

7. The image processing apparatus of claim 6, wherein the image processing section makes a difference between the contrast of chromatic color image data and the contrast of neutral color image data to be 5% or more.

8. The image processing apparatus of claim 6 or claim 7, wherein the image processing section emphasizes chroma of the image data more as lightness of the image data becomes lower.

9. The image processing apparatus of any one of claims 6 to 8, wherein the image processing section increases a degree of chroma emphasis for the image data as chroma of the image data becomes greater.

10. The image processing apparatus of any one of claims 6 to 9, wherein the image processing section increases a degree of chroma emphasis for the image data depending on an amount of changes in lightness of the image data.

11. The image processing apparatus of any one of claims 6 to 10, wherein the image processing section lowers maximum

lightness of the image data after image processing to be lower than maximum lightness of the image data before image processing.

12. The image processing apparatus of any one of claims 6 to 11, wherein the image processing section compresses a hue reproduction angle in a range of a flesh color area corresponding to a flesh color in the image data.

13. The image processing apparatus of any one of claims 1 to 12, wherein the image data to be subjected to the image processing are scene-referred data in the course of photographing and/or RAW data.

14. An image processing apparatus comprising an image processing section which conducts image processing on image data such that maximum lightness of image data for a reflection-type print formed through subtractive color mixing is lowered, compared to image data for a transmission-type film formed through additive color mixture or for a visible image on a monitor.

15. The image processing apparatus of claim 1, wherein the image processing section transforms image data subjected to the image processing into output color image signals based on characteristics of an image outputting section.

16. The image processing apparatus of any one of claims 1 to 15, wherein the image processing section comprises:

a first transform section which transforms input color image signals of the image data into signals in a standard color space based on characteristics of an image inputting section;

a second transform section which transforms the signals in the standard color space based on characteristics of an image outputting section; and

a third transform section which transforms signals in the standard color space having been transformed by the second transform section into output color image signals.

17. The image processing apparatus of any one of claims 1 to 16, wherein the image processing section conducts image processing based on a color reproduction range of an output system of the image data such that the image processing causes no saturation of chroma changes by using a broader color gamut than a color gamut of the image data before image processing.

18. The image processing apparatus of any one of claims 1 to 17, wherein the image processing section conducts image processing on the image data which holds a profile of an image inputting section.

19. The image processing apparatus of any one of claims 1 to 18, wherein the image processing section conducts image processing on the image data for outputting on a silver halide medium.

20. The image processing apparatus of any one of claims 1 to 19, wherein the image processing section compresses a hue reproduction angle more greatly in a flesh color area of human image data, compared with still-life image data.

21. The image processing apparatus of any one of claims 1 to 20, wherein the image processing section conducts scene discrimination and/or face image extraction, and changes a transformation condition for the image processing based on results of the scene discrimination and/or the face image extraction.

22. An image photographing apparatus comprising:

- a photographing section to create image data by photographing a photographic object; and

- an image processing apparatus of any one of claims 1 to 21, wherein the image processing section conducts image processing for image data created by the photographing section.

23. An image processing system comprising:

- an image input section to input image data;

- an image output section to output image data; and

- an image processing apparatus of any one of claims 1 to 21, wherein the image processing apparatus conducts image processing on image data inputted from the image input section, and outputs the image data to the image output section.

24. An image processing method for conducting image processing on image data, comprising an image processing step to compress a hue reproduction angle in a range of flesh color area corresponding to a flesh color in the image data.

25. The image processing method of claim 24, wherein the image processing step compresses the hue reproduction angle in a range of flesh color area such that the range of flesh color area is converged to a target hue reproduction angle specified as a target.

26. The image processing method of claim 24 or claim 25, wherein the image processing step changes a center of a compressed hue reproduction angle in a range of the flesh color area and/or an amount of compression, based on a color temperature and a white point of illumination light at image data generation.

27. The image processing method of any one of claims 24 to 26, wherein the image processing step enhances a degree of the compression of the hue reproduction angle as an angle of the image data recedes from the target hue reproduction angle, in the case of converging the range of the flesh color area to the target hue reproduction angle determined specifically.

28. The image processing method of any one of claims 24 to 27, wherein, the image processing step decreases a degree of compression of the hue reproduction angle as chroma of the image data becomes higher.

29. An image processing method comprising an image processing step to conduct image processing on image data, wherein the image processing step makes a contrast of neutral color image data to be low contrast, and makes a contrast of chromatic color image data to be high contrast.

30. The image processing method of claim 29, wherein the image processing step makes a difference between the contrast of chromatic color image data and the contrast of neutral color image data to be 5% or more.

31. The image processing method of claim 29 or claim 30, wherein the image processing step emphasizes chroma of the image data more as lightness of the image data becomes lower.

32. The image processing method of any one of claims 29 to 31, wherein the image processing step increases a degree of chroma emphasis for the image data as chroma of the image data becomes greater.

33. The image processing method of any one of claims 29 to 33, wherein the image processing step increases a degree of chroma emphasis for the image data depending on an amount of changes in lightness of the image data.

34. The image processing method of any one of claims 29 to 33, wherein the image processing step lowers maximum lightness of the image data after image processing to be

lower than maximum lightness of the image data before image processing.

35. The image processing method of any one of claims 29 to 34, wherein the image processing step compresses a hue reproduction angle in a range of a flesh color area corresponding to a flesh color in the image data.

36. The image processing method of any one of claims 24 to 35, wherein the image data to be subjected to the image processing are scene-referred data in the course of photographing and/or RAW data.

37. An image processing method comprising an image processing step to conduct image processing on image data such that maximum lightness of image data for a reflection-type print formed through subtractive color mixing is lowered, compared to image data for a transmission-type film formed through additive color mixture or for a visible image on a monitor.

38. The image processing method of any one of claims 24 to 37, wherein the image processing step transforms image data subjected to the image processing into output color image signals based on characteristics of an image outputting section.

39. The image processing method of any one of claims 24 to 38, wherein the image processing step comprises:

a first transform step to transform input color image signals of the image data into signals in a standard color space based on characteristics of an image inputting section;

a second transform step to transform the signals in the standard color space based on characteristics of an image outputting section; and

a third transform step to transform signals in the standard color space having been transformed by the second transform step into output color image signals.

40. The image processing method of any one of claims 24 to 39, wherein the image processing step conducts image processing based on a color reproduction range of an output system of the image data such that the image processing causes no saturation of chroma changes by using a broader color gamut than a color gamut of the image data before image processing.

41. The image processing method of any one of claims 24 to 40, wherein the image processing step conducts image processing on the image data which holds a profile of an image inputting section.

42. The image processing method of any one of claims 24 to 41, wherein the image processing step conducts image processing on the image data for outputting on a silver halide medium.

43. The image processing method of any one of claims 24 to 42, wherein the image processing step compresses a hue

reproduction angle more greatly in a flesh color area of human image data, compared with still-life image data.

44. The image processing method of any one of claims 24 to 43, wherein the image processing section conducts scene discrimination and/or face image extraction, and changes a transformation condition for the image processing based on results of the scene discrimination and/or the face image extraction.

45. A program for enabling a computer to realize an image processing function to compress a hue reproduction angle in a range of flesh color area corresponding to a flesh color in the image data.

46. The program of claim 45, wherein the image processing function compresses the hue reproduction angle in a range of flesh color area such that the range of flesh color area is converged to a target hue reproduction angle specified as a target.

47. The program of claim 45 or claim 46, wherein the image processing function changes a center of a compressed hue reproduction angle in a range of the flesh color area and/or an amount of compression, based on a color temperature and a white point of illumination light at image data generation.

48. The program of any one of claims 45 to 47, wherein the image processing function enhances a degree of the compression of the hue reproduction angle as an angle of the

image data recedes from the target hue reproduction angle, in the case of converging the range of the flesh color area to the target hue reproduction angle determined specifically.

49. The program of any one of claims 45 to 48, wherein, the image processing function decreases a degree of compression of the hue reproduction angle as chroma of the image data becomes higher.

50. A program for enabling a computer to realize an image processing function to make a contrast of neutral color image data to be low contrast, and make a contrast of chromatic color image data to be high contrast.

51. The program of claim 50, wherein the image processing function makes a difference between the contrast of chromatic color image data and the contrast of neutral color image data to be 5% or more.

52. The program of claim 50 or claim 51, wherein the image processing function emphasizes chroma of the image data more as lightness of the image data becomes lower.

53. The program of any one of claims 50 to 52, wherein the image processing function increases a degree of chroma emphasis for the image data as chroma of the image data becomes greater.

54. The program of any one of claims 50 to 53, wherein the image processing function increases a degree of chroma

emphasis for the image data depending on an amount of changes in lightness of the image data.

55. The program of any one of claims 50 to 54, wherein the image processing function lowers maximum lightness of the image data after image processing to be lower than maximum lightness of the image data before image processing.

56. The program of any one of claims 50 to 55, wherein the image processing function compresses a hue reproduction angle in a range of a flesh color area corresponding to a flesh color in the image data.

57. The program of any one of claims 45 to 56, wherein the image data to be subjected to the image processing are scene-referred data in the course of photographing and/or RAW data.

58. A program for enabling a computer to realize an image processing function to lower maximum lightness of image data for a reflection-type print formed through subtractive color mixing, compared to image data for a transmission-type film formed through additive color mixture or for a visible image on a monitor.

59. The program of any one of claims 45 to 58, wherein the image processing function transforms image data subjected to the image processing into output color image signals based on characteristics of an image outputting section.

60. The program of any one of claims 45 to 59, wherein the image processing function comprises:

a first transform function to transform input color image signals of the image data into signals in a standard color space based on characteristics of an image inputting section;

a second transform function to transform the signals in the standard color space based on characteristics of an image outputting section; and

a third transform function to transform signals in the standard color space having been transformed by the second transform function into output color image signals.

61. The program of any one of claims 45 to 60, wherein the image processing function conducts image processing based on a color reproduction range of an output system of the image data so that the image processing causes no saturation of chroma changes by using a broader color gamut than a color gamut of the image data before image processing.

62. The program of any one of claims 45 to 61, wherein the image processing function conducts image processing on the image data which holds a profile of an image inputting section.

63. The program of any one of claims 45 to 62, wherein the image processing function conducts image processing on the image data for outputting on a silver halide medium.

64. The program of any one of claims 45 to 63, wherein the image processing function compresses a hue reproduction angle more greatly in a flesh color area of human image data, compared with still-life image data.

65. The program of any one of claims 45 to 64, wherein the image processing function conducts scene discrimination and/or face image extraction, and changes a transformation condition for the image processing based on results of the scene discrimination and/or the face image extraction.